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SOME BUTTERFLIES OF THE ARAKAN COAST.

BY

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The following list has been compiled from the collection and observation of the butterflies of the Arakan coastal belt made by the author during the third and final Arakan campaign from November 1944 to the end of June 1945. The list is by no means complete, particularly as regards the butterflies of the wet season, but a fairly comprehensive survey was made of the dry season broods. The 'Skippers' were somewhat neglected and a good dozen species were seen that were neither collected nor identified. The areas in which the observations were made are listed below:—

The dense mixed jungle between Cox's Bazaar in the north to Ramkapellaung in the south; the hills and littoral of the Teknaf Peninsula.	Early November to mid-January i.e. from the end of the rains onward.
Bawli Bazaar, Maungdaw and Buthidaung; the foothills of the Mayu Range.	November and January.
Ramree Island and the islands and mangrove swamps to the East.	21 January to 11 June, including the first two weeks of the rains.
Taungup Area.	18 to 22 March. (A raid on the area during which, incidentally, one of my officers earned a posthumous V.C.)

All the specimens were taken at elevations between sea level and 400 ft. The vegetation of this coastal area is varied, but except for

the jungles south of Cox's Bazaar and the hills of the Teknaf peninsular and the Mayu Range, it is nowhere very dense. Between Ramree Island and the mainland there are several miles of mangrove swamps which did not appear to support many species of butterflies.

The code numbers and classification of the butterflies in this list are according to Evan's *Identification of Indian Butterflies*, second edition, the volume that gave me my introduction to Indian Butterflies when I first arrived in this country two years ago. The months during which each species occurred have been indicated when the period covered by a brood was restricted. Where the insect appeared throughout the period of observation no dates have been given.

A map of the area may be found in Vol. 45, p. 605.

PAPILIONIDAE.

1. A 1-1 γ *Troides helena cerberus*, Fd.

Ramree, just before the rains. No specimens were taken so the identification is not positive.

2. A 2-9 *Tros hector*, L.

Locally common in E. Bengal as far south as Teknaf which is its southern limit.

3. A 2-10 γ *Tros aristolochiae goniopeltis*, Roth.

Not rare from Teknaf southwards. Specimens from further south have more extensive white markings than those from Teknaf.

4. A 3-5 γ . *Chilasa clytia onpape*, M.

5. v. *dissimillima*, Evans.

Not rare, May and June.

6. A 4-2. *Papilio memnon agenor*, L.

Common. The f v. *alcanor* was not seen.

7. A 4-25 f . *Papilio polytes romulus*, Cr.

8. f v. *stichius*, Hub.

9. f v. *cyrus*, F.

m common. The f *cyrus* and *stichius* forms were not rare. The typical f absent in S. Arakan where *P. hector* does not fly. *Stichius* mimics the local form of *T. aristolochiae* to the extent of having very extensive white markings on the hind wing.

10. A 4-27. f *Papilio demoleus demoleus*, L.

11. A 4-27. β *Papilio demoleus malayanus*, Wall.

The nominotypical race flies as far south as the Mayu Range. Specimens of *demoleus* from Ramree southwards appear to belong to the race *malayanus*.

12. A 5-4 β . *Pathysa nomius swinhoei*, M.

13. A 5-6 γ . *Pathysa antiphates pompilius*, F.

Found round tree-tops of most hills at the beginning of the rains.

14. A 6-3 γ . *Zetides doson axion*, Fd.

Ramree, June, not rare.

15. A 6-8 β . *Zetides agammemnon agammemnon*, L.

Widely distributed, but not common. I found one newly emerged f drying her wings on the barrel of a recently fired three inch mortar!

PIERIDAE.

16. B 1-♂. *Leptosia nina nina*, F.
Common, found fluttering aimlessly in the undergrowth throughout the day.
17. B 4-10 β. *Pieris canidia indica*, Evans.
Uncommon.
18. B 6-4 β. *Delias hyparete hierte*, Hub.
Common, particularly from November to January.
19. B 6-11. *Delias descombesi leucacantha*, Fruh.
♂ very common, ♀ rare, although I have bred *descombesi* since in Java and found the females to be, if anything, in the majority.
Both these species of *Delias* were commonly seen flying over mangrove swamps.
20. B 9-2 γ. *Cepora nerissa dapha*, M
21. B 9-3 γ. *Cepora nadina nadina*, Luc.
Nerissa common, *nadina* not rare. DSF Jan and Feb; WSF June.
22. B 10-5 γ. *Appias lyncida hippoides*, M.
23. B 10-6 β. *Appias albina darada*, Fd.
24. B 10-7 γ. *Appias paulina adamsoni*, M.
The DSF of *lyncida* was common in January and February. *Albina* and *paulina* occurred earlier, from November onwards, but were never very common. The WSF *Appias* had not appeared in Arakan by June 11th, but I saw them in Rangoon later on in the month.
25. B 11-1. *Catopsilia crocale*, Cr.
Very common, but was not seen at all in the dry weather. A mass emergence took place in Ramree Island on April 1st.
26. B 11-2. *Catopsilia pomona*, F.
27. ♀ v. *catilla*, Cr.
28. ♀ v. *bidotata*, Fruh.
Appeared only in the dry season. *Bidotata* is a distinct form, differing from *catilla* in having two quadrate, purple, sub-costal patches unh instead of the extensive purple blotches covering a large part of the wing.
In this area *pomona* may quite possibly be the DSF of *crocale*.
29. B 11-4. *Catopsilia pyranthe minna*, Herbst.
30. B 11-5. *Catopsilia florella gnoma*, F.
Both very common in the coastal scrub. *Florella* most in evidence from November to January.
31. B 15-4 ♂. *Eurema blanda silhetana*, Wall.
32. B 15-5 γ. *Eurema hecabe hecabe*, L.
33. B 15-6. *Eurema lacteola sarinoides*, Fr. (*Eurema simulatrix sarinoides*, Fruh.)
E. libythea and *E. laeta* were not recorded. *Blanda* was common, but only locally. I have taken several dwarf *hecabe* from various localities from Calcutta to Rangoon. Expanse 30 to 32 mm. There appears to be nothing intermediate between these and the normal butterfly which has a span of at least 40 mm. One aberration of *hecabe* was found, having a dark streak from end cell under the scv unh, the streak being about 3 mm. long.
I took one ♀ of *E. simulatrix sarinoides*, Fruh., in Ramree. It was sent to Brigadier Evans who has confirmed the identification. There is no female in the British Museum and this specimen has therefore been sent to Brigadier Evans for inclusion in the B.N. collection.
34. B 17-2 η. *Ixias pyrene latifasciata*, But.
Locally common.

35. B 19-γ. *Hebomoia glaucippe glaucippe*, L.

DSF common down to sea-level in January and February, but fewer occurred from March to June. The WSF appeared in Rangoon at the end of June.

36. B 20-3. *Pareronia valeria hippia*, F.

Common. Generally smaller than indicated by Evans; 62 to 75 mm.

DANAIDAE.

37. C 2-2. *Danais agleoides*, Fd.

A single male taken in Ramree, March.

38. C 2-9. *Danais limniace mutina*, Fruh.39. C 2-11 ♂. *Danais gautama gautama*, M.40. C 2-12. *Danais plexippus*, L.41. C 2-13 ♂. *Danais melanippus indicus*, Fruh.42. C 2-15. *Danais chrysippus*, L.

All fairly common except *gautama* of which I have only one male taken at Teknaf in December.

43. C 3-1 β. *Euploea mulciber mulciber*, Cr.

Common.

44. C 3-2 ♂. *Euploea alcathoe doubledayi*, Fd.

One pair from Ramree Island in June.

45. C 3-7 δ. *Euploea core layardi*, Druce.

Not rare.

46. C 3-8. *Euploea godarti*, Lucas.47. v. *plain apex upf.*

The commonest *Euploea* in the area. The variety with a plain apex upf was also common, but only males were seen.

48. C 3-10 ♂. *Euploea deione deione*, Wd.49. C 3-15 β. *Euploea diocletiana diocletiana*, F.50. C 3-17 β. *Euploea klugii klugii*, M.51. C 3-18 γ. *Euploea crassa crassa*, But.

Diocletiana and *klugii* not rare but local, particularly the former. I found no female *diocletiana* at all. I have one male *deione* from Teknaf, December. Although all species occur on the mainland and in the mangrove country, the numbers and variety on the islands are much restricted.

SATYRIDAE.

52. D 2-9 β. *Mycalesis perseus blasius*, F.53. D 2-10 β. *Mycalesis mineus mineus*, L.54. D 2-12 β. *Mycalesis visala neovisala*, Fruh.

Perseus and *mineus* were both locally common. The DSF appeared in November and the WSF at the beginning of June. A single male *visala*, WSF, was taken on Ramree Island in June.

Two very tattered WSF males of *mineus*, obvious survivors from the previous year's brood, were taken on 8th March when they would be at least five months old.

55. D 3-22 γ. *Lethe rohria rohria*, F.

I found this insect only on the bamboo-covered eastern slopes of Kalein Taung, a small hilly island to the east of Ramree.

56. D 14-11 β. *Ypthima hubneri hubneri*, Kirby.

57. D 14-15 γ . *Ypthima baldus baldus*, F.

Both common, the seasonal forms appeared with those of *Mycalesis*.

58. D 16- β . *Orsotrioena medus medus*, F.

Not common. WSF from June.

59. D 22-1. *Melanitis leda ismene*, Cr.

There appeared to be considerable overlap of the seasonal forms. Fresh DSF insects were appearing in June when the WSF was already to be seen in abundance.

60. D 25-1 γ . *Elymnias hypermnestra undularis*, Drury.

Male common, female rarely seen.

NYMPHALIDAE.

61. E 10-1 β . *Discophora tullia zal*, Wd.

In thick jungle, especially where there is bamboo. I have observed these butterflies from a distance of a few inches, but never managed to catch one.

62. F 1-2 δ . *Charaxes polyxena hierax*, Fd.63. F 2-2 γ . *Eriboea athamas athamas*, Dr.

Not rare in the dry season, *polyxena* the rarer of the two.

64. F 18-3 γ . *Euthalia lepidea sthavara*, Fruh.65. F 18-7 ζ . *Euthalia jahnu jahnu*, M.66. F 18-14 η . *Euthalia garuda garuda*, M.

Euthalia were never very common, except for *garuda*, which was common in Ramree Island, February. *Jahnu* was found only in the jungles near Cox's Bazaar.

67. F 19-3. *Adolias dirtea jadeitina*, Fruh.

I found two males on a jungly path near a hill top on Ramree in June. They were both very old specimens, just enough left of them for me to effect an identification.

68. F 20- γ . *Parthenos sylvia gambrisius*, F.

Locally common. The brood was new in November, and no new specimens appeared after January. In one nullah near Teknaf it frequently came to the water to drink from the mud and bask on the stones.

69. F 21- γ . *Lebadea martha attenuata*, M.

Not rare. Very little different from the description given by Evans for *L. martha ismene*, Db & Hew.

70. F 24-7 γ . *Limenitis procris procris*, Cr.

Not rare in evergreen country.

71. F 25-2 ζ . *Pantoporia nepte inara*, Db.72. F 25-3. *Pantoporia cama*, M.

Neither very common and extremely local.

73. F 26-1 β . *Neptis columella ophiana*, M.74. F 26-2 β . *Neptis jumbah jumbah*, M.

Both common.

75. F 26-6 β . *Neptis hylas astola*, M.76. F 26-6 γ . *Neptis hylas adara*, M.

Both races occur on Ramree island, although the general one is *adara* which also occurs down the coast. The contrast between the golden ochreous underside of *adara* and the ferruginous brown of *astola* is very noticeable.

77. F 26-7 β . *Neptis soma soma*, M.
 78. F 26-8 β . *Neptis nandina susruta*, M.
 Both found at Teknaf in December. Both rather rare, particularly *soma*.
 79. F 26-32 β . *Neptis hordonia hordonia*, Stoll.
 Common.
 80. F 30-1. *Hypolimnas missipus*, L.
 81. F 30-2. *Hypolimnas bolina*, L.
 Neither very common except for the female of *bolina* which was much in evidence just before the rains. The male *bolina* rarely seen.
 82. F 31. *Yoma sabina vasuki*, Doh.
 Not rare. Fond of rocky nullahs and generally seen near water or in bamboo jungle.
 83. F 33- γ . *Doleschallia bisaltide indica*, M.
 Quite a common butterfly, but very difficult to catch owing to its habit of flying off into the thickets as soon as disturbed.
 84. F 35-1 β . *Precis hierta magna*, Evans.
 85. F 35-3 γ . *Precis lemonias lemonias*, L.
 86. F 35-4 ζ . *Precis almana almana*, L.
 87. F 35-5. *Precis atlites*, L.
 88. F 35-6 γ . *Precis iphita iphita*, Cr.
 All widely distributed. In addition to *almana* and *iphita*, the others also show marked seasonal variation. The WSF appears in June. I have not seen *P. orithya* anywhere between Calcutta and Rangoon.
 89. F 41- γ . *Cupha erymanthis lotis*, Sulz.
 90. F 42-1. *Atella phalanta*, Drury.
 91. F 43- β . *Issoria sinha sinha*, Koll.
 All are found together, especially on Lantana. *Sinha* is rather less common than the others.
 92. F 45-1. *Cirrochroa fasciata*, Fd.
 93. F 45-3 ζ . *Cirrochroa tyche mithila*, M.
 Fairly common inhabitants of shady jungle paths and nullahs.
 94. F 47-3. *Cethosia cyane*, Drury.
 Not rare, but I did not see any after mid-December.
 95. F 49-1 γ . *Ergolis ariadne pallidior*, Fruh.
 96. F 49-2 δ . *Ergolis merione assama*. Evans.
 Both locally common throughout the year.

ERYCINIDAE.

97. G 2. *Zemeros flegyas indicus*, Fruh.
 98. G 4-5 γ . *Abisara echerius angulata*, M.
 Always to be found flitting around jungle paths and clearings.

LYCAENIDAE.

99. H 5-3. *Gerydus boisduvali assamensis*, Doh.
 100. H 8- ζ . *Spalgis epius epius*, Wd.
 Not rare.
 101. H 11-1 ζ . *Castalius rosimon rosimon*, F.
 102. H 11-2 β . *Castalius caleta decidia*, Hew.

103. H 11-3 ♂. *Castalius ethion ethion*, Db & Hew.

Not rare. Mostly from November to January. *Rosimon* widely distributed but the others rather local.

104. H 13. *Syntarucus plinius*, F.

105. H 23-♂. *Chilades laius laius*, Cr.

May and June, Common.

106. H 24-4. *Zizeeria lysimon*, Hub.

107. H 24-6 β. *Zizeeria otis otis*, F.

Common. The only two *zizeeria* seen.

108. H 25-1. *Euchrysops cnejus*, F.

109. H 25-3 β. *Euchrysops pandava pandava*, Hors.

110. H 26-1 ♂. *Lycaenesthes emolus emolus*, God.

111. H 27-1. *Catachrysops strabo*, F.

112. H 27-2. *Catachrysops lithargyria*, M

113. H 28. *Lampides boeticus*, L.

114. H 29-1 ♂. *Jamides bochus bochus*, Cr.

All common and widely distributed except *lithargyria*, which was rather rare.

115. H 29-4. *Jamides cleodus pura*, M.

116. H 29-5 β. *Jamides celeno celeno*, Cr.

117. H 29-9 β. *Jamides alecto euryaces*, Fruh.

The wet season broods cover most of the year. I have seen them as late as December and they appeared on Ramree Island early in March. DSF form December to April. *Cleodus* and *alecto* not rare, but only occur in the jungles, unlike *celeno*.

118. H 32-3 ♂. *Nacaduba hermus nabo*, Fruh.

119. H 32-8 β. *Nacaduba curava euplea*, Fruh.

120. H 32-15 ♂. *Nacaduba nora nora*, Fd.

All fairly common.

121. H 44-1. *Curetis thetis*, Drury.

Teknaf, November and December.

122. H 46-1 ♂. *Horsfieldia anita arracana*, GrS.

Not rare, November to January.

123. H 49-28. *Amblypodia khamti*, Doh.

Cox's Bazaar.

124. H 49-32 ♂. *Amblypodia agaba aurella*, Evans.

125. H 49-32 β. *Amblypodia agaba agaba*, Hew.

These two races overlap in Ramree Island. *Aurella* flying to the north, *agaba* to the south.

126. H 49-36 γ. *Amblypodia centaurus centaurus*, F.

127. H 49-39 β. *Amblypodia amantes amatrix*, De N.

Centaurus was very common at all times along the coast. *Amantes* occurred with it, but was never so common.

128. H 53-γ. *Loxura atymnus continentalis*, Fruh.

Locally common. DSF November to February; WSF end of May onwards.

29. H 57-12. *Spindasis syama peguanus*, M.

130. H 57-13 β . *Spindasis lohita himalayanus*, M.

A new brood of *lohita* appeared at the end of February. It lasted only four or five days as a host of lizards immediately set to work to pick them off the Mimost bushes on which they were wont to sit. Their lobes and tails had afforded a certain measure of protection, judging by the number of insects I saw with these parts neatly removed with a lizard's bite. *S. lohita* seemed to be preferred to *Lycaenesthes emolus* which commonly fed off the same bushes. *S. syama* not rare.

131. H 60-8. *Tajuria melastigma*, De N.

A single male taken at Kyaukpyu, February.

132. H 70-7. *Cheritra freja freja*, F.

Rare. I have one specimen from Cox's Bazaar in January and one from Ramree in March.

133. H 80-3 ζ . *Hypolycaena erylus himavantus*, Fruh.134. H 83-1 ζ . *Deudoryx epijarbas amatus*, Fruh.135. H 85-15 ζ . *Rapala pheritimus petosiris*, Hew136. H 85-14 ζ . *Rapala dienecece dienecece*, Hew.137. H 85-17. *Rapala jarbas*, F.

I have taken all these butterflies from the same clump of bushes at Kyaukpyu in Ramree Island. None of them are very common anywhere along the coast.

138. H 87- β . *Bindahara phocides phocides*, F.

Two males on Ramree Island, in a jungle clearing, early June.

HESPERIIDAE.

139. I 1-7 β . *Hasora badra badra*, M.140. I 1-15 β . *Hasora taminatus bhavara*, Fruh.141. I 1-16. *Hasora alexis alexis*, F.

Occur together in the scrub near the sea shore.

142. I 2-2. *Ismene mahintha*, M.143. I 5. *Badamia exclamationis*, Fab.

Not rare.

144. I 14-3 β . *Tagiades obscurus meetana*, M.145. I 14-5 ζ . *Tagiades atticus khasiana*, M.

Common in palm groves and under the banks of muddy pools.

146. I 21-3 ζ . *Sarangesa dasahara dasahara*, M.

Ramree Island. Locally common.

147. I 25-1. *Odontoptilum angulata sura*, Fd.

Teknaf, uncommon.

148. I 42-1. *Ampittia dioscorides*, F.149. I 43-9. *Aeromachus pygmaeus*, F.150. I 46-2 β . *Iambrix salsala salsala*, M.151. I 51- ζ . *Sancus pulligo subfasciatus*, M152. I 57-2. *Udaspes folus*, Cr.

All common except *pygmaeus* which was not often seen.

153. I 59-1 β . *Gangara thyrsis thyrsis*, F.

Not rare. Generally flies very early in the morning or at dusk.

154. I 64-1. *Matapa aria*, M.155. I 77-1. *Unkana attina*, Hew.

Not rare. Evans gives 'Bassein' as the farthest north that *attina* flies.

156. I 91-1 ♂. *Astycus augias augias*, L.
 157. I 91-2 β. *Astycus pythias bambusae*, M.
 Both common.
 158. I 97-24 β. *Baoris conjuncta javana*, Mab.
 159. I 97-33 β. *Baoris zelleri cinnara*, Wallace.

There were several other *Baoris* that I did not catch or identify. *Conjuncta* was not rare, *zelleri* common.

ANALYSIS

Number of species and forms, excluding seasonal forms, found to occur in the area :—

<i>Papilionidae.</i>	15
<i>Pieridae.</i>	21
<i>Danaidae.</i>	15
<i>Satyridae.</i>	9
<i>Amathusiidae.</i>	1
<i>Nymphalidae.</i>	35
<i>Erycinidae.</i>	2
<i>Lycaenidae.</i>	40
<i>Hesperiidae.</i>	21

Total 159

A NEW PEST OF SUGARCANE IN INDIA—*ICERYA PILOSA*
NARDI GREEN (COCCIDAE).

(With two plates.)

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INTRODUCTION.

While engaged in the study of the pests of sugarcane under the Imperial Council Scheme for Research on Insect Pests of Sugarcane, the writer came across a large mealy-bug doing considerable damage to very young sugarcane seedlings at Coimbatore, South India. Specimens were identified as *Icerya pilosa nardi* Green. The species was originally described by Green (1922) as *Icerya seychellarum* var. *nardi* from 'a single specimen found on mana grass (*Andropogon nardus*) on uncultivated land at Diyatalawa, Ceylon', and later on regarded it as *Icerya pilosa* var. *nardi* (1937). This is the first record of the species from the mainland of India and mentioned by Isaac (1937) as noticed for the first time on sugarcane in India. Since then a number of coccids including the above one, attacking sugarcane in India, are listed by Pruthi and Rao (1942).